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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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PILLSBURY WINTHROP SHAW PITTMAN LLP P.O. BOX 10500 MCLEAN, VA 22102			THOMAS, BRANDI N	
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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/646,525	Applicant(s) MEISBURGER, WILLIAM DANIEL	
	Examiner Brandi N. Thomas	Art Unit 2873	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 June 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 23-35, 37-44, 63-68 and 80-95 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 63-68 is/are allowed.
- 6) ☒ Claim(s) 23-35, 37-39, 41, 43, 44, 80-88 and 90-95 is/are rejected.
- 7) ☒ Claim(s) 40, 42 and 89 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 August 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>6/13/06</u> . | 6) <input checked="" type="checkbox"/> Other: <u>Detailed Action</u> . |

DETAILED ACTION

Information Disclosure Statement

1. Acknowledgement is made of receipt of Information Disclosure Statement(s) (PTO-1449) filed 6/13/06. An initialed copy is attached to this Office Action.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 23-29, 31-33, 35, 37, 41, 43, 44, and 80-82 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jain et al. (6312134) in view of Woods et al. (6229649 B1).

Regarding claim 23, Jain et al. discloses, in figure 1, a lithographic tool for patterning a substrate, comprising: a spatial light modulator (3), said spatial light modulator (3) comprising at least one area array of individually switchable elements (array of micromirrors, individual mirrors tilt in different directions (Col. 7, lines 12-16); a light source (1) configured to illuminate said spatial light modulator (3) (col. 7, lines 11-12); and an image movement mechanism for moving said image across the surface of said substrate (5) (col. 7, lines 30-34 and 66) but does not specifically disclose the imaging optics configured to project a blurred image of said spatial light modulator on said substrate. Woods et al. discloses, in figure 1, wherein the imaging optics (10) configured to project a blurred image (12) of said spatial light modulator (32) on said

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substrate (38) (col. 2, lines 64-67 and col. 3, lines 1-13). Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to combine the device of Jain et al. with the blurred image of Woods et al. for the purpose of decreasing image resolution (col. 2, lines 64-67 and col. 3, lines 1-13).

Regarding claim 24, Jain et al. discloses, in figure 1, a lithographic tool for patterning a substrate, wherein said spatial light modulator (3) comprises at least one digital micro-mirror device (col. 7, line 13).

Regarding claim 25, Jain et al. discloses, in figure 1, a lithographic tool for patterning a substrate, wherein said light source (1) is a continuous light source (col. 8, lines 18-21).

Regarding claim 26, Jain et al. discloses, in figure 1, a lithographic tool for patterning a substrate, wherein said light source (1) is an arc lamp (col. 2, line 35 and col. 8, lines 23-25).

Regarding claim 27, Jain et al. discloses, in figure 1, a lithographic tool for patterning a substrate, wherein said light source (1) is a laser (col. 7, line 46).

Regarding claim 28, Jain et al. discloses, in figure 1, a lithographic tool for patterning a substrate, wherein said laser is a continuous laser (col. 8, lines 18-21).

Regarding claim 29, Jain et al. discloses, in figure 1, a lithographic tool for patterning a substrate, wherein said laser is a continuous laser (col. 8, lines 18-21) but does not specifically disclose the laser as a quasi-continuous laser. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the invention and use a quasi-continuous laser for the purpose of a quasi-continuous laser has a pump source that is switched on for short time intervals.

Regarding claim 31, Jain et al. discloses the claimed invention but does not specifically disclose wherein said imaging optics is configured to form a defocused image of said spatial light modulator. Woods et al. discloses, in figure 1, wherein the imaging optics (10) configured to project a blurred image (12) of said spatial light modulator (32) on said substrate (38) (col. 2, lines 64-67 and col. 3, lines 1-13). Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to combine the device of Jain et al. with the blurred image of Woods et al. for the purpose of decreasing image resolution (col. 2, lines 64-67 and col. 3, lines 1-13).

Regarding claim 32, Jain et al. discloses, in figure 1, a lithographic tool for patterning a substrate but does not specifically disclose wherein said imaging optics that blurs said image of said spatial light modulator or the use of a diffuser. Woods et al. discloses, in figure 1, wherein the imaging optics (10) configured to project a blurred image (12) of said spatial light modulator (32) on said substrate (38) (col. 2, lines 64-67 and col. 3, lines 1-13). Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to combine the device of Jain et al. with the blurred image of Woods et al. for the purpose of decreasing image resolution (col. 2, lines 64-67 and col. 3, lines 1-13). However, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use a diffuser for the purpose of a diffuser scatters or disperses light emitted from a source.

Regarding claim 33, Jain et al. discloses, in figure 1, a lithographic tool for patterning a substrate a numerical aperture (col. 8, lines 30-37 and 58-66) but does not specifically disclose wherein said image of said spatial light modulator is blurred. Woods et al. discloses, in figure 1, wherein the imaging optics (10) configured to project a blurred image (12) of said spatial light

modulator (32) (col. 2, lines 64-67 and col. 3, lines 1-13). Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to combine the device of Jain et al. with the blurred image of Woods et al. for the purpose of decreasing image resolution (col. 2, lines 64-67 and col. 3, lines 1-13).

Regarding claim 35, Jain et al. discloses, in figure 4, a lithographic tool for patterning a substrate, wherein said imaging optics (4) comprises a single projection lens system (col. 7, lines 16-20).

Regarding claim 37, Jain et al. discloses, in figure 1, a lithographic tool for patterning a substrate, wherein said image movement mechanism comprises a stage (6) on which said substrate (5) is carried (col. 7, line 18).

Regarding claim 41, Jain et al. discloses, in figure 1, a lithographic tool for patterning a substrate, further comprising a control computer (7) configured to control switching said elements of said spatial light modulator while said image is moving across the surface of said substrate (5) (col. 7, lines 24-30).

Regarding claims 43, 44 and 82, Jain et al. discloses, in figure 1, a lithographic tool for patterning a substrate, comprising: a spatial light modulator (3), said spatial light modulator (3) comprising a multiplicity of area arrays of individually switchable elements (array of micromirrors, individual mirrors tilt in different directions (Col. 7, lines 12-16); a light source (1) configured to illuminate said spatial light modulator (3) (col. 7, lines 11-12); and an image movement mechanism for moving said image across the surface of said substrate (5); wherein the number of said area arrays is greater than the number of said projection lens systems (col. 7, lines 16-18) but does not specifically disclose a plurality of spatial light modulators and a

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multiplicity of projection lens systems configured to project a blurred image of said spatial light modulator on said substrate. It would have been obvious to modify the invention to include a plurality of spatial light modulator, since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art (St. Regis Paper Co. v. Bemis Co., 193 USPQ 8). Woods et al. discloses, in figure 1, wherein the imaging optics (10) configured to project a blurred image (12) of said spatial light modulator (32) on said substrate (38) (col. 2, lines 64-67 and col. 3, lines 1-13). Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to combine the device of Jain et al. with the blurred image of Woods et al. for the purpose of decreasing image resolution (col. 2, lines 64-67 and col. 3, lines 1-13).

Regarding claim 80, Jain et al. discloses, in figure 1, a lithographic tool for patterning a substrate, wherein said spatial light modulator (3) is a diffractive device (col. 5, lines 8-10).

Regarding claim 81, Jain et al. discloses, in figure 1, a lithographic tool for patterning a substrate, wherein said spatial light modulator (3) is a liquid crystal device (col. 10, lines 10-19).

4. Claims 30, 38, 39, 94, and 95 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jain et al. (6312134) in view of Woods et al. (6229649 B1) as applied to claim 23 above, and further in view of Takahashi (US 2002/0080339 A1).

Regarding claims 30 and 95, Jain et al. and Woods et al. disclose a lithographic tool for patterning a substrate, wherein said imaging optics (4) is a projection lens system (col. 7, lines 16-18) but does not specifically disclose wherein the imaging optics is a telecentric projection system. Takahashi discloses wherein the imaging optics is a telecentric projection system

(section 0072). Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to combine the device of Jain et al. and Woods et al. with the telecentric projection system of Takahashi for the purpose of the light remaining perfectly perpendicular to the plane (section 0072).

Regarding claim 38, Jain et al. and Woods et al. disclose a lithographic tool for patterning a substrate, wherein said image movement mechanism comprises a stage (6) (col. 7, lines 13-18) but does not specifically disclose a stage on which said spatial light modulator is carried. Takahashi discloses, in figure 1, a stage (7) on which said spatial light modulator is carried (section 0052). Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to combine the device of Jain et al. with the stage of Takahashi for the purpose of moving the spatial light modulator in a particular direction (section 0052).

Regarding claim 39, Jain et al. discloses, in figure 1, a lithographic tool for patterning a substrate but does not specifically disclose a stage on which said imaging optics is carried. Takahashi discloses, in figure 1, a stage (7) on which said imaging optics (PL) is carried (section 0052). Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to combine the device of Jain et al. with the stage of Takahashi for the purpose of moving the imaging optics in a particular direction (section 0052).

Regarding claim 94, Jain et al. and Woods et al. disclose a lithographic tool for patterning a substrate but does not specifically disclose wherein said imaging optics comprises on projection lens system (PL) projection lens for a spatial light modulator. Takahashi discloses a lithographic tool for patterning a substrate, wherein said imaging optics comprises on projection lens system (PL) projection lens for a spatial light modulator (sections 0059, 0072, and 0085) but

does not specifically disclose a plurality of spatial light modulators. It would have been obvious to modify the invention to include a plurality of spatial light modulator, since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art (*St. Regis Paper Co. v. Bemis Co.*, 193 USPQ 8). Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the invention to include a plurality of spatial light modulator for the purpose of modulating large quantity of light.

5. Claims 34 and 93 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jain et al. (6312134) in view of Woods et al. (6229649 B1) as applied to claim 23 above, and further in view of Lim (5504629).

Regarding claim 34, Jain et al. and Woods et al. disclose a lithographic tool for patterning a substrate configured to blur said image of said spatial light modulator (col. 2, lines 64-67 and col. 3, lines 1-13) but does not specifically disclose wherein said imaging optics comprises a microlens array. Lim discloses wherein said imaging optics (PL) comprises a microlens array (35) (col. 3, lines 6-14). Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to combine the device of Jain et al. and Woods et al. with the microlens array of Lim for the purpose of collimating light (col. 3, lines 6-14).

Regarding claim 93, Jain et al. and Woods et al. disclose a lithographic tool for patterning a substrate configured to blur said image of said spatial light modulator (col. 2, lines 64-67 and col. 3, lines 1-13) but does not specifically disclose wherein said imaging optics comprises a microlens array and an array of spatial light modulators. It would have been obvious to modify

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the invention to include a plurality of spatial light modulator, since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art (St. Regis Paper Co. v. Bemis Co., 193 USPQ 8) Lim discloses wherein said imaging optics (PL) comprises a microlens array (35) (col. 3, lines 6-14). Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to combine the device of Jain et al. and Woods et al. with the microlens array of Lim for the purpose of collimating light (col. 3, lines 6-14).

6. Claims 83-88 and 90-92 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jain et al. (6312134) in view of Woods et al. (6229649 B1) as applied to claim 82 above, and further in view of Eggers et al. (6965364).

Regarding claims 83, 85, and 86, Jain et al. and Woods et al. disclose a lithographic tool for patterning a substrate but does not specifically disclose wherein said plurality of spatial light modulators are arranged in at least one row, said at least one row being perpendicular to the direction of movement of said image across the surface of said substrate. Eggers et al. discloses wherein said spatial light modulators are arranged in at least one row, said at least one row being perpendicular to the direction of movement of said image across the surface of said substrate (col. 1, lines 9-21 and 24-35). It would have been obvious to modify the invention to include a plurality of spatial light modulator, since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art (St. Regis Paper Co. v. Bemis Co., 193 USPQ 8). Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to combine the devices of Jain et al. and Woods et al. with the

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spatial light modulators of Eggers et al. for the purpose of keeping stationary relative to the photosensitive material during the motion (col. 1, lines 9-21 and 24-35).

Regarding claims 84 and 87, Jain et al. and Woods et al. disclose a lithographic tool for patterning a substrate but does not specifically disclose wherein said spatial light modulators are equally spaced within said row. Eggers et al. discloses wherein said spatial light modulators are equally spaced within said row (col. 1, lines 9-21 and 24-35). It would have been obvious to modify the invention to include a plurality of spatial light modulator, since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art (St. Regis Paper Co. v. Bemis Co., 193 USPQ 8). Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to combine the devices of Jain et al. and Woods et al. with the spatial light modulators of Eggers et al. for the purpose of keeping stationary relative to the photosensitive material during the motion (col. 1, lines 9-21 and 24-35).

Regarding claim 88, Jain et al. and Takahashi disclose a lithographic tool for patterning a substrate but does not specifically disclose wherein the positions of said spatial light modulators are staggered from one row to the next. Eggers et al. discloses, in figure 3, the positions of said spatial light modulators are staggered from one row to the next (col. 1, lines 9-21 and 24-35). Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to combine the devices of Jain et al. and Woods et al. with the spatial light modulators of Eggers et al. for the purpose of keeping stationary relative to the photosensitive material during the motion (col. 1, lines 9-21 and 24-35).

Regarding claim 90, Jain et al. and Takahashi disclose a lithographic tool for patterning a substrate but does not specifically disclose wherein the plurality of spatial light modulators are configured in a two-dimensional array. Eggers et al. discloses wherein the plurality of spatial light modulators is configured in a two-dimensional array (col. 1, lines 9-21 and 24-35). It would have been obvious to modify the invention to include a plurality of spatial light modulator, since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art (St. Regis Paper Co. v. Bemis Co., 193 USPQ 8). Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to combine the devices of Jain et al. and Woods et al. with the spatial light modulators of Eggers et al. for the purpose of keeping stationary relative to the photosensitive material during the motion (col. 1, lines 9-21 and 24-35).

Regarding claim 91, Jain et al. and Takahashi disclose a lithographic tool for patterning a substrate but does not specifically disclose wherein the plurality of spatial light modulators are configured to make most efficient use of said imaging optics. It would have been obvious to modify the invention to include a plurality of spatial light modulator, since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art (St. Regis Paper Co. v. Bemis Co., 193 USPQ 8). Eggers et al. discloses wherein the plurality of spatial light modulators is configured to make most efficient use of said imaging optics (col. 1, lines 9-21 and 24-35). Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to combine the devices of Jain et al. and Woods et al. with the spatial light modulators of Eggers et al. for the purpose of keeping stationary relative to the photosensitive material during the motion (col. 1, lines 9-21 and 24-35).

Regarding claim 92, Jain et al. and Takahashi disclose a lithographic tool for patterning a substrate but does not specifically disclose wherein the plurality of spatial light modulators are arranged within a roughly circular area. It would have been obvious to modify the invention to include a plurality of spatial light modulator, since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art (St. Regis Paper Co. v. Bemis Co., 193 USPQ 8). Eggers et al. discloses wherein the plurality of spatial light modulators is arranged within a roughly circular area. Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to combine the devices of Jain et al. and Woods et al. with the spatial light modulators of Eggers et al. for the purpose of keeping stationary relative to the photosensitive material during the motion (col. 1, lines 9-21 and 24-35).

Allowable Subject Matter

7. Claims 63-68 are allowed.
8. Claims 40, 42, and 89 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The prior art taken either singularly or in combination fails to anticipate or fairly suggest the limitations of the independent claim(s), in such a manner that a rejection under 35 U.S.C. 102 or 103 would be proper. The prior art fails to teach a combination of all the claimed features as presented in claim(s) 40, 42, 63, 67, and 89, wherein the claimed invention comprises, in claim 40, wherein said image movement mechanism comprises rotatable, spaced apart, axially parallel

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film drums, said substrate being wrapped around and tensioned between said drums; in claim 42, wherein the substrate comprises a height measuring system; in claim 63, a light switching mechanism positioned on a light path, said light path going from said light source to said spatial light modulator and ending at said substrate, said light switching mechanism being configured to control passage of light along said light path; in claim 67, and a second spatial light modulator positioned on a light path, said light path going from said light source to said first spatial light modulator and ending at said substrate, said second spatial light modulator being configured to control passage of light along said light path; in claim 89, wherein the spatial light modulators are configured such that each spatial light modulator exposes a non-overlapping swath of the substrate, as claimed

Response to Arguments

9. Applicant's arguments with respect to claims 23-25, 37-44, 63-68, and 80-95 have been considered but are moot in view of the new ground(s) of rejection. Woods et al. discloses wherein the imaging optics configures to project a blurred image (col. 2, lines 64-67 and col. 3, lines 1-13). Lim discloses wherein said imaging optics (PL) comprises a microlens array (35) (col. 3, lines 6-14). It would have been obvious to modify the invention to include a plurality of spatial light modulator, since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art (St. Regis Paper Co. v. Bemis Co., 193 USPQ 8).

Conclusion

10. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brandi N. Thomas whose telephone number is 571-272-2341. The examiner can normally be reached on 7- 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky Mack can be reached on 571-272-2333. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


BNT


Alicia M Harrington
Primary Examiner
Art Unit 2873